

A Review on Iron Chelators in Treatment of Iron Overload Syndromes

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ABSTRACT

Iron chelation therapy is used to reduce iron overload development due to its deposition in various organs such as liver and heart after regular transfusion. In this review, different iron chelators implicated in treatment of iron overload in various clinical conditions have been evaluated using more up-to-date studies focusing on these therapeutic agents. Deferoxamine, Deferiprone and Deferasirox are the most important specific US FDA-approved iron chelators. Each of these chelators has their own advantages and disadvantages, various target diseases, levels of deposited iron and clinical symptoms of the afflicted patients which may affect their selection as the best modality. Taken together, in many clinical disorders, choosing a standard chelator does not have an accurate index which requires further clarifications. The aim of this review is to introduce and compare the different iron chelators regarding their advantages and disadvantages, usage dose and specific applications.

Keywords: Chelators, Iron overload, Treatment

INTRODUCTION

Iron is one of the essential elements in body which its concentration is tightly regulated. Iron overload during iron deposition in multiple organs is along with serum ferri n value over than 1000 µg/L.¹ Iron overload, either genetically or acquired, may occur by several conditions such as frequent transfusions, abuse consumption of iron (often as supplement) and chronic hepatitis have potential to cause acquired iron overload.²⁻³ Among genetic disorders that causes iron overload including

hereditary hemochromatosis (all types), African iron overload, sickle cell disease, major beta-thalassemia, sideroblastic anemia, enzyme de ciency (pyruvate kinase, G6P) and rare disorders of transporting proteins (Atransferrinemia, Aceruloplasminemia),³⁻⁸ hereditary hemochromatosis is the most common genetic causes of iron overload.⁹ Small intestine in patient absorbs high level iron which accumulates in liver, pancreas and some parts of brain which results to impair vital functions.¹⁰ Free radical